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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,292	02/07/2002	John A. Bell	004524.P070X	2035

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EXAMINER

WOOD, KEVIN S

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/072,292		BELL ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Kevin S Wood		2874	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-53 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,8-13,37,44-46 and 48-50 is/are rejected.
- 7) ☒ Claim(s) 2-7,14-20,38-43 and 47 is/are objected to.
- 8) ☒ Claim(s) 21-36 and 51-53 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0402</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-20 and 37-50, drawn to a free space optical system or method including a multi-region ferrule, classified in class 385, subclass 78.
  - II. Claims 21-23 and 51-53, drawn to a free space optical system or method including a multi-cell detector, classified in class 385, subclass 88.
  - III. Claims 24-36, drawn to a free space optical system including a plurality of fibers bundled together, classified in class 385, subclass 115.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as an apparatus for fiber alignment. See MPEP § 806.05(d).
3. Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as an optical loss detection system. See MPEP § 806.05(d).
4. Inventions III and I are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are

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shown to be separately usable. In the instant case, invention III has separate utility such as an optical power tapper or divider. See MPEP § 806.05(d).

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, the search required for Group II is not required for Group III, and the search required for Group III is not required for Group I, restriction for examination purposes as indicated is proper.

7. During a telephone conversation with James Go on 1/30/04 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-20 and 37-50. Affirmation of this election must be made by applicant in replying to this Office action. Claims 21-36 and 51-53 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Drawings***

9. The informal drawings are of sufficient quality to permit examination. However, new corrected drawings will be required when this application is allowed. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings.

### ***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1, 8, 37, 44 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,690,459 to Bruns.

Referring to claims 1 and 37, Bruns discloses all the limitations of the claimed invention. Bruns discloses a free space optical apparatus, including: an optical fiber (104) to propagate at least a portion of an incoming light beam; and a ferrule (102) coupled to the optical fiber, wherein the ferrule includes a plurality of regions to direct one or more portions of the incoming light beam in one or more predetermined directions, an amount of light in each of the one or more portions being a function of an

alignment between the incoming light beam and the apparatus. See Fig. 1-4 of the reference, along with their respective portions of the specification.

Referring to claims 8 and 44, Bruns discloses all the limitations of the claimed invention. Bruns discloses at least one region (240) includes a reflective facet. See Fig. 1-4 of the reference, along with their respective portions of the specification.

Referring to claim 45, Bruns discloses all the limitations of the claimed invention. Bruns discloses the incoming light beam has a pedestal distribution. See Fig. 1-4 of the reference, along with their respective portions of the specification.

### ***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 9-13, 46 and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,690,459 to Bruns.

Referring to claims 9, 46, and 48, Bruns discloses a free space optical system, including: an optical fiber (104) to propagate at least a portion of an incoming light beam; and a ferrule (102) fitted to the first end of the optical fiber, wherein the ferrule includes a plurality of regions (240) to direct one or more portions of the incoming light beam in one or more predetermined directions, an amount of light in each of the one or more portions being a function of an alignment between the incoming light beam and the system; and a plurality of tracking detectors (148 or 244) arranged to receive the one or more portions directed by the plurality of regions. See Fig. 1-4 of the reference, along with their respective portions of the specification. Bruns does not appear to specifically disclose a communications detector, coupled to the second end of the optical fiber, to receive the received portion of the incoming light beam via the optical fiber. However, Bruns does disclose that when the light is improperly aligned, "information in the light beam that does not enter the core may be lost". The fact that the light beam is carrying information implies that some sort of communication detector or system including a communications detector would be coupled to the second end of the optical fiber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a communications detector or system with a communications detector coupled to the second end of the optical fiber, in order to receive and make use of the information stored within the transmitted light beam.



Referring to claims 10 and 11, Bruns discloses or makes obvious all the limitations of the claimed invention, except Bruns does not appear to specifically disclose that the tracking detectors (148,244) are photodiodes or avalanche photodiodes. Photodiodes are commonly used as sensors in optical systems because they are capable of producing an electrical signal proportional to the light falling upon them. Avalanche photodiodes have a higher internal gain than a typical photodiode, allowing the photodiode to more accurately detect weaker signals. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize photodiodes or avalanche photodiodes as the tracking detectors, since it was known in the art that photodiodes are typically used as optical sensors because they produce an electrical signal proportional to the light falling upon them.

Referring to claim 12 and 49, Bruns discloses or makes obvious all the limitations of the claimed invention. Bruns discloses the bore (240,242) for collecting and redirecting the portions of the light to the tracking detectors (244). See Fig. 3-4.

Referring to claim 13, Bruns discloses or makes obvious all the limitations of the claimed invention. Bruns discloses the lens (122,222) for redirecting the light beam onto the optical fiber core (108,208). See Fig. 1 and 3.

Referring to claim 50, Bruns discloses all the limitations of the claimed invention. Bruns discloses the incoming light beam has a pedestal distribution. See Fig. 1-4 of the reference, along with their respective portions of the specification.

***Allowable Subject Matter***



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15. Claims 2-7, 14-20, 38-43 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter:

Referring to claims 2-7, 14-20, 38-43 and 47, the primary reason for these claims being allowable, is the inclusion of the limitation that at least one region includes a diffractive element.

### ***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S Wood whose telephone number is (571) 272-2364. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KSW



Brian Healy  
Primary Examiner